

**ABSTRACT OF THE DISCLOSURE**

• Fuel control systems for use with a gas turbine engines which accounts for real-time thermodynamic engine effects when attempting to match or track the  $NDOT_{Actual}$  rate to the  $NDOT_{Demand}$  rate. The fuel control system includes a mechanism for measuring several engine operating parameters and a mechanism for determining an initial engine fuel demand based on the measured engine operating parameters. The control system further includes a mechanism for estimating, during engine operation and based on the measured operating parameters, the amount of heat transferred between fuel combustion gases and the engine metal and estimating an effective fuel flow adjustment based therefrom. The control system disclosed herein also includes a mechanism for determining a final engine fuel demand based on the initial predicted engine fuel demand and the estimated effective fuel flow adjustment.

.StmLib1:922493.1 03/05/02